FAX

To: Joyce Ackerman, U.S. EPA
Region 8
999 18th St., Suite 500 -8-EPR-SA
Denver, Co 80202 - 2466

FAX #: 303 - 312 - 6071

From: Barbara Fiechtner
[redacted]

Date: Monday, Sept. 8, 1997

FAX has 29 pages including cover sheet.

1. Letters written by Harvey Fiechtner
2. Response from PSCo
3. Letter from Seema Shah
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7. People Barb Called Note: Page 3 *
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Tom Martino Engineer
Tom called PSCo

July 16, 1987

Dear Tom

I am writing you this letter in hopes that you can do something with my neighbor. I live North of Denver, 2 miles East on Colo. 66From I-25 and 1¼ miles North. My neighbor,I am having trouble with is Public Service of Colo.

Here is my problem. In the summer of 1978 Public Service built a Dam across the road from me to service their Fort St. Vrain Nuclear Generating Plant.

In July of 1979, we were awaken during the night by a strong smell of an open sewer. We discovered, the next morning, that the horrable smell was coming from water that was being discharged from P. S. C. lake.

I called the Health Dept, at Greeley, about the terrible smell coming from the lake, that was keeping us awake ever night. I told them that it only smelled after sun down. They sent a man out about 10:00. He checked the smell with some sort of a box, and told me it was stronger that his box could check, and he would notifie Publice Service.

They Came out an checked the lake and found that a Rest Home, on the South side of the lake, was dumping raw sewage into the lake. The Home than put in a septic tank and leach lines. They told me that should end my problem.

The next year in July 1981, my family was again rudly awaken by the stink of an open sewer. I contracted P. S. C. and they finally sent a man out by the name of Tom McDonald, HYD. Coranator, we discussed the problem and he felt sorry for me but said he had no power to do anything about it. The smells quites about the middle of Aug. So we suffered for about a month with out a good night sleep, for the second year in a row.

So in the hot summer of July 1982, We again had to suffer with sleepless nights from the smell of my neighbors stinking discharge water.

I again contacted the Weld County Health Deptartment, and they sent a Millie Turner, out to see me. I told her my problem with Public Service, she said I might get some help from the Coast Guard, becouse P. S. C. was dumping polluted water in a river, but she could not help me.

On March 11 1983 I wrote a letter to the president of P. S. C. Letter enclosed.

On March 25 1983 I received an answer, letter also enclosed.

In the summer of 1983 Mr. Mason and I discussed the problem and an answer to it. They did not release water from the lake this summer, so we did have a sleepfull summer nights.

Mr. Manson said he has put in for an airrator to pump air into the lake, which they felt would clear up the problem.

They did not run the power plant in 1984.

In the summer of 1985 they installed an airrator in the lake. They had a lot of trouable with it, as a result it did not operate very long that summer. I again

locked out as they did not run the power plant that summer. The lake started to spill water over the over flow, and again was stinking. I call Jay Platt, He's the ditch rider for P. S. C. and he came out and run water out of the lake for about 5 days then shut it off, and it no longer spilled water over the over flow.

In 1986 they did not run the power plant,and the lake was spilling all summer when it started to smell I again contacted Jay, and he ran enought water out to keep it from spilling until after Aug. So I did Have a good summer.

This summer Jay retired and I talked to the man who took his place and told him of my problem with the lake. I ask him to inform the HYD. Coranator that I would like to talk over this problem with him before the middle of summer, but I have not heard from him to this date.

Again this summer they are using water from the lake and again I am not sleeping because of the smell.

I sure hope you can help me convince Publice Service, to do something about the smell coming from their lake so I can get my sleep in the summer the same as they do.

yours truley

Harvey Rechtenwald

March 11,1983

Dear Sir,

I am writing to you, not as a stockholder or a customer, but as a neighbor. I live across the road from Public Service's lake, I believe you call it Lake Marie, on Weld County Road 13 between Weld County Road 32 and 34.

My problem with the lake is in the summer, late July and early August, my family and I can not sleep at night because of the sewage smell coming from the discharge water running out of the lake.

This problem has kept us awake in the late summer ever since the lake has been built, and when ever water is turned out.

The first year I called the Weld County Health Department and they came out and took a test of the smell and said it was higher then they could test. They sent a notice to Public Service confirming how bad the smell was. The Health Dept. checked around the lake and found that Country View Care Center had an open sewer line running into the lake. Within a week Country View Care Center eliminated the sewer line from running into the lake. We suffered the rest of the summer hoping the smell would soon quit, but smell continued until the temperature of the water cooled down.

The next year, about the last week in July, we were awakened during the night by the stinking smell of an open sewer. I called Public Service's Fort St. Vrain Nuclear Generating Plant and they sent a Mr. R.T. VanValkeburg out and we discussed the problem and he said he would do something about the smell. But again, like always,with Public Service, all I got was a lot of talk. We again spent a sleepless late-summer, waiting for Mr. R.T. VanValkeburg to do something about the smell.

The next summer, 1981, the same smell woke us up during the night in late July and again I called Public Service Nuclear Generating Plant, this time they sent Mr. Robert Mason out to discuss the problem with me. Again all I got was a lot of talk and unkept promises.

This last summer, 1982 , we were again awakened by the smell of an open sewer. Iagain contacted Public Service and Mr. Mason contacted me and we discussed the problem again, and how it could be eliminated. Mr. Mason promised me he would get in touch with me to further discuss the problem; Mr. Mason never contacted me the following week. Again I called the Health Dept. and Millie Turner came out and discussed the problem with me but did not say what she could do about it.

I am still waiting for Mr.Mason's call, but like always , all the promises Public Service has made to me since they have become my neighbor, have not been kept.

When I say ALL I mean ALL promises. When I heard you were going to build a dam across the road from me, I contacted Public Service and they sent Mr. Allen J. Miller out to talk to me about the dam. He informed me that the dam would only be 7 feet high across the road from my house. By the completion of the dam it was over 20 feet high.

I contacted Public Service again and they sent two gentlemen to discuss the dam. I told them I did not like to see that pile of dirt every time I looked west, and they were going to landscape the property. I do not call Ragweed and Broom grass landscaping.

In the same conversation with them I asked if I had to put up with motor boats and week-end campers on the lake and they promised me that the lake would be closed to all recreational activities.

When duck and goose season open it sounds like the start of the Normandy invasion on the north side of the lake. On almost every day of hunting season we a awakened at dawn by the sound of hunters hunting geese and duck on the lake.

Three years ago I was working in the yard and about sun-down when a bullet fired from a rifle,coming from your lake,hit the house about two feet from my head.

I'm writing this letter asking you, as a neighbor, if you could eliminate the problem of an open sewer smelling water so my family and I can get some sleep this summer , like you and your family can.

Sincerely,
Your Eastern Neighbor,

Public Service Company of Colorado

1800 W. Sheri Lane Littleton, Colorado 80120

March 25, 1983

Mr. Harvey D. Fiechtner
[redacted]

Re: Thomas Reservoir

Dear Mr. Fiechtner:

Thank you for your letter of March 11, 1983. I am very sorry that you feel the promises made by our Company have not been kept. I will not dwell on the past since that can never be changed. However, it is very apparent that we can use the past as a lesson that is well learned. That lesson is that there was a communication breakdown.

I personally don't want to see any such breakdown occur again. To avoid this, please call or write me at any time. My telephone number is 571-8203 and my address is 1800 West Sheri Lane, Littleton, Colorado 80120.

Please call me so that we can meet at your convenience to discuss the questions you have had. I cannot guarantee your complete satisfaction, however, I can assure you that we will make every effort to investigate and answer your questions.

I would now like to answer some of the items addressed in your letter. Before I do, I again want to assure you that I feel a meeting at your convenience is in order. My answers now are for the background on these issues:

Smell problem

The Company is as much a victim as you in this case. We believe that we are receiving polluted water. If this is the case, the material in the water is the source of the smell. In an attempt to reduce the smell, we began to release 11 cubic feet of water from the reservoir on the first of March. After receiving your letter, we notified our Chemistry Department to obtain in-flow and out-flow samples. The samples will be gathered on March 22 and every week thereafter. This will continue until we have identified the type and source of the suspected pollution. Our position is that any source of pollution that can legally be controlled from discharging will be controlled. However, some sources can legally discharge without treatment.

We are investigating what our legal situation is in this case also.

Our Chemistry Department is investigating alternate solutions. I feel this is an ongoing review and may not offer immediate solutions.

I look forward to meeting with you.

Sincerely yours,

Robert R. Mason
Manager, Hydro Production

RRM/sk

cc: File

Janary 25 1983

Dear Sir

I Wrote to you a letter, enclosed, dated March 11 1983. Your answer to my letter, letter enclosed, dated March 25 1983.

So far to this date their has been no improvements in the condition of the water coming out of the lake. I feel that this condition after 14 years should have been resolved.

The time and money Public Service has spent on this problem has not resolved it at all. The water coming out of the lake is still the same as it was 14 years ago.

You spent good money to put electric to the lake to run an airiator. This airiator just worked on the surface water of the lake. The pollated water is coming out of the lake is from the bottom, therefore the airiator did no good. The first winter, after the lake froze over, someone stole it.

The first year you filled the lake, the Colo. Game and Fish Dept. came out and placed gill nets in the lake. The next day they invited me to go with them to see what they had cought. I asked why they wanted the lake, they told me they wanted it for a bass rearing lake. They all so took water samples at several different levels, and at several differet places in the lake. About a month later one of the warden stopped and told me they did not want the lake because it was a dead lake 6 feet on down. I asked why the lake was dead, and he told me it was from decaying organ matter. I told him I was not surprised because when they filled the lake they left all the grasses that was in a field and all the other vagitation from the slew that is now the bottom of the lake. These weeds and grasses should have been burned or cut and removed from the bottom of the lake before it was filled.

The first year there were fisherman on the lake, and they were catching croppie that had come from the old lake. The second year they cought nothing. The third year there were no more fishing done on the lake.

Public Service told me they tested the water and it was being pollated from a dairy that is up stream from the lake. This dairy has been there for 50 years or more and the old lake that this same water dumped into had bass croppie, blue gill, and catfish in it. The fish that were caught in your new lake came from this old lake after the dike was breached.

I feel if you were to ask the Game and Fish Department to sample the water, they could tell you what is causing the poluation and if you were to follow their recommedations, your discharge water would be

as clear as the 100's of other lakes in Colo. are and I would not have this bad smell coming into my bedroom window everynight all summer long.

I feel after 9 years you people have not tryed to solve this problem in any way. I also feel it would be cheaper to clean up the lake rather then run water out during the day and shutting it off at night. I appriate the way you have did it so I could sleep at night. This is not a cure for the lake only a temperary sulation to a problem that could be resolved with a little effort.

I am looking forward to hear from you on this matter.

Letter written by Harvey Fiechtner

Public Service®

Public Service
Company of Colorado
P.O. Box 840
Denver, CO 80201-0840

April 12, 1993

Mr. Harvey Fiechtner
[redacted]

Dear Mr. Fiechtner:

I don't believe we've met, so I'd like to introduce myself. I am Mike Everard and my job with Public Service Company is that of Unit Manager, Water Resources and I am responsible for the operation of Lake Thomas. My address is 1225 17th St., Suite 1100, Denver, CO 80202 and my phone number is 294-8005. The person that is responsible for the day to day operation at Lake Thomas is Lowell Reichenberg and his title is Water Specialist. He is officed at Valmont Station and his phone number is 440-2580. Lowell's position is part time and he does not spend a lot of time in the office, but his phone has an answering machine and he checks for messages frequently.

I am writing to you in response to your letter of January 25, 1993. I have been aware of the problem you refer to in your letter for some time. Over the past several years, Mr. Stan Haven and now Mr. Lowell Reichenberg have been directed to make only daytime water releases from Lake Thomas during warm summer periods so that the odor from the water does not occur at night making it difficult for you to sleep. I was under the impression that this accomodation had helped the situation.

We are unaware of a solution to the odor problem at Lake Thomas, but we will again have a representative from PSC Applied Sciences review the situation and see if a solution can be found. I would be glad to meet with you and discuss this matter further, but I would suggest that the meeting be sometime after the Applied Sciences people have investigated this situation. I will be in contact with you as soon as that occurs.

Sincerely,

Michael J. Everard

Michael J. Everard
Unit Manager, Water Resources

cc: Steve Miller

STATE OF COLORADO

Roy Romer, Governor
Patti Shwayder, Acting Executive Director

Dedicated to protecting and improving the health and environment of the people of Colorado

Main Building
4300 Cherry Creek Dr. S.
Denver, Colorado 80222-1530
Phone (303) 692-2000

Laboratory Building
4210 E. 11th Avenue
Denver, Colorado 80220-3716
(303) 691-4700

Colorado Department
of Public Health
and Environment

TO: Barbara Fiechtner

FROM: Seema Shah, Colorado Dept. of Public Health and Environment

DATE: August 18, 1995

SUBJECT: Reproductive Hazards of Hydrogen Sulfide

The following is a summary of the reproductive hazards associated with exposure to hydrogen sulfide. This information was obtained from the TOMES environmental toxicology database.

// Hydrogen sulfide is in Class 3 (may cause irreversible effects which can be life-threatening) for general toxicity because it causes respiratory paralysis and inhibition of cellular respiration. Because there have been reports that it may affect female reproduction in occupational exposures, but where exposure to other chemicals is also involved, it is in Class A- for reproductive hazard. Chemicals in the A- group are unconfirmed human reproductive hazards, in this case where the reproductive risk from chronic exposures cannot be determined because of mixed exposures and/or inadequate dose-response data.

There is not sufficient data from exposures to hydrogen sulfide alone to permit an assessment of its reproductive hazard to humans. However, one should be aware that other chemicals which can affect the central nervous system (CARBON MONOXIDE (XREF), ORGANIC SOLVENTS (XREF), CYANIDE (XREF)) have been associated with increased risk for neurological and developmental defects in the unborn. //

This summary basically outlines the information I gave to you over the phone. I hope you find this information helpful. If you need anymore information please feel free to contact me at 303-692-2617.

Copy received from Earl Sterkel, Town of Mead 1995

Permit No.: CO-0023060

County: Weld

AUTHORIZATION TO DISCHARGE UNDER THE

COLORADO DISCHARGE PERMIT SYSTEM

In compliance with the provisions of the Colorado Water Quality Control Act, (25-8-101 et seq., CRS, 1973 as amended) and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq.; the "Act") the

MEAD SANITATION DISTRICT

is authorized to discharge from their domestic wastewater treatment facility

located in the South 1/2 of Section 10, T3N, R68W

to an unnamed intermittent stream tributary to Lake Thomas

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Part I, and II hereof. All discharges authorized herein shall be consistent with the terms and conditions of this permit.

The applicant may demand an adjudicatory hearing within thirty (30) days of the issuance of the final permit determination, per Regulation for the State Discharge Permit System, 6.8.0 (1). Should the applicant choose to contest any of the effluent limitations, monitoring requirements or other conditions contained herein, the applicant must comply with Section 24-4-104 CRS 1973 and the Regulations for the State Discharge Permit System. Failure to contest any such effluent limitation, monitoring requirement, or other condition, constitutes consent to the condition by the applicant.

This permit and the authorization to discharge shall expire at midnight, February 28, 1997

Issued and Signed this 10th day of February, 1992

COLORADO DEPARTMENT OF HEALTH

J. David Holm, Director
Water Quality Control Division

CERTIFIED LETTER NO. P 784 025 538
DATE SIGNED 2/10/92
EFFECTIVE DATE OF PERMIT 4/1/92

1995 - Kathy Sullivan, Colo. State Permits - she told me that this comes up for renewal every 5 yrs & PSCo is notified & has a right to contest this.

STATE OF COLORADO

Roy Romer, Governor
Patti Shwayder, Acting Executive Director

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Colorado Department
of Public Health
and Environment

August 25, 1995

Barbara Fiechtner
[redacted]

Dear Mrs. Fiechtner:

Here is the information I promised to send you. I have included toxicity information on ammonia and hydrogen sulfide, a form from CSU's water testing lab showing the prices they charge for inorganic analyses, a copy of the State law on surface water which implements the Federal Clean Water Act, as well as general chemical information on these pollutants. I hope at least some of this information will be useful to you.

The ammonia, BOD, and hydrogen sulfide levels that were measured in the surface water sample from the Public Service Company pond are probably higher than the concentrations of ammonia and hydrogen sulfide that you normally breathe. This is because an equilibrium will be established between the air and water. Some ammonia and hydrogen sulfide will evaporate into the air, but some will stay dissolved in the water. How much of each chemical goes into the air or stays in the water will depend upon temperature (the warmer it is, the more will evaporate), and upon the concentration of dissolved or ionized hydrogen sulfide or ammonia, respectively. Therefore, a more useful measurement would be an air concentration of ammonia and hydrogen sulfide taken at your house or in the cornfield where you work.

Unfortunately, so far, I have not been able to find anyone at the CDPHE who has a monitor capable of detecting these two chemicals, though you probably should check with Jean Terry of the Air Pollution Control Division to be sure. You probably will have better luck at the EPA or if you have to, I can help you find a list of private companies or other sources that might be able to do the monitoring for you. One option you might check is your local fire department.

The BOD (biological oxygen demand), as I mentioned over the phone, does not reflect a <u>single</u> chemical concentration, but rather, is a measure of the amount of oxygen available in the water for plants and animals to use. The lower this number is, the less demand there is for oxygen by the species present in the water. That means that oxygen is readily available when the BOD is low,

and more oxygen sensitive species can survive. While the BOD levels of 34-35 in the pond water slightly exceed the state BOD standard of 30, it is not totally incompatible with life. That is why less oxygen sensitive species like carp can still survive in that water, while trout never could.

Because hydrogen sulfide is heavier than both air or water, the concentrations of this chemical will be greater in the deeper water of the pond than at the surface. That is why the smell is so strong when the water is let out at the base of the dam. They are essentially drawing off water from the most contaminated portion of the reservoir, that is, the deeper parts. If they would aerate the pond, or draw off water from the surface with a pump, the smell would be much less.

Toxicity Information:

Hydrogen sulfide:

Hydrogen sulfide is a colorless, flammable gas with an intense odor of rotten eggs. While it can be smelled at very low concentrations (humans can detect it at 0.1 ppm; ppm = parts per million), the sense of smell should not be relied upon to detect it, as the nose becomes desensitized to it, especially at higher concentrations. It is a common air pollutant, especially in the vicinity of oil or gasfields, but also, as you have discovered, is produced whenever organic matter decays, such as in sewers, in manure pits on farms, or from decaying matter in swamps. Hydrogen sulfide can be extremely toxic and exposure can be fatal at high concentrations.

Hydrogen sulfide causes its toxic and/or fatal effects by asphyxiating. That means it inhibits the respiration of individual cells in the body so that they can not utilize the oxygen that is breathed in by the lungs and carried by the blood to all tissues. If cells cannot get enough oxygen for a long enough time they become hypoxic (oxygen starved) and can eventually die. When this happens in vital tissues, particularly the brain or heart, it results in death. In addition to asphyxiating or inhibiting respiration of individual cells, this substance, at high concentrations (greater than 500 ppm), can also paralyze the respiratory control center in the brain as well, rapidly resulting in an inability to breathe, and death.

Either acute (short-term) or chronic exposures to low vapor concentrations (less than or equal to 250 ppm) can produce a variety of signs and symptoms. Victims of the more severe symptoms should consult a physician. Low concentrations of 20-150 ppm can cause irritation of the eyes including painful conjunctivitis, intolerance to light, tearing, and corneal opacity (similar to cataracts). These low concentrations can also cause runny nose, and if it gets on the skin, redness and pain. The irritation is caused by the formation of dilute sulfuric acid when the hydrogen sulfide combines with moisture on the skin or mucous membranes. These concentrations (20-150 ppm) are probably similar to those you have been exposed to most of the time.

Slightly higher concentrations (less than or equal to 250 ppm) have been reported to cause respiratory irritation including coughing, sore throat, and bronchitis. If exposure is prolonged, pulmonary edema (build-up of fluid in the lungs) can result. The slightly higher concentrations also can cause excessive salivation (drooling), nausea, and diarrhea. Effects on the central nervous system including headache, dizziness, weakness, loss of coordination and judgement, insomnia, and nervousness, and cardiac effects such as heartbeat irregularities often result after exposure to moderate concentrations (250-500 ppm). The inhibition of cellular respiration at these concentrations may also explain symptoms like fatigue. From your description of your symptoms, you probably have been exposed to concentrations on this order less often.

There is not much available data on delayed or long-term effects of hydrogen sulfide. However, it is not known to be a carcinogen. Hydrogen sulfide did not cause birth defects in experimental animals. However, women workers in the viscose rayon industry exposed to hydrogen sulfide as well as carbon disulfide, (a known human reproductive hazard), experienced a greater number of miscarriages than normal.

Symptoms of acute (short-term) exposure to high concentrations include sudden collapse and convulsions, possibly resulting in death if the victim is not removed to fresh air and resuscitated. Such a victim should immediately be taken to the emergency room. Exposures of 500-700 ppm have been reported to cause unconsciousness, and 600 ppm for 30 minutes and 800 ppm for 5 minutes have caused human deaths.

If exposure is terminated promptly, recovery often occurs quickly, however neurological effects have been reported to persist in survivors of very high-level exposure.

Those people who may be most susceptible to the effects of hydrogen sulfide are:

1) those people who already have respiratory problems, such as asthma and bronchitis, NOTE: I could not find any information that hydrogen sulfide causes asthma, but you should consult your physician.

2) those people who already have neurological conditions,

3) those people who already have eye problems,

4) people who work with natural gas or crude oil since they have a greater potential for exposure. In addition, many of the hydrocarbons contained in natural gas are also asphyxiants, and they may increase the sensitivity to the hydrogen sulfide,

5) people who are exposed to other asphyxiant gases that affect the central nervous system or respiration (simple asphyxiants, carbon

monoxide, cyanide, ammonia, or solvents) may be more sensitive to hydrogen sulfide.

The American Conference of Governmental Industrial Hygienists (ACGIH) and OSHA have derived legally enforceable inhalation standards for workers of 10 ppm = 14 mg/m^3 air. This is a time weighted average or TWA, meaning that it is a concentration derived for workers' exposure over an 8 hour work day. Both ACGIH and OSHA are explicit in stating that these standards are meant for workers. They are NOT meant to apply to the general public since the public includes sensitive populations like children and those who already have respiratory problems. In addition, workers generally are more healthy than the general population. These ACGIH or OSHA numbers are also not meant to serve as ambient air standards since they are calculated on the basis of health and other (including economic and technical feasibility) bases over an 8 hour work day rather than the 24 hours that the general public would be exposed.

The EPA has derived a chronic inhalation reference concentration (RfC) for the general public of 0.0009 mg hydrogen sulfide/m^3 air. This is equivalent to 0.0006 ppm hydrogen sulfide in air. The 0.0006 ppm hydrogen sulfide RfC is an estimated concentration that even sensitive populations can breathe daily over a whole lifetime without appreciable risk of irritation or toxicity. This RfC is not an enforceable standard. Rather, it is a recommendation made on the basis of health considerations alone. However, RfCs are used as the basis of many risk-related decisions made by both EPA and CDPHE on Superfund cleanup sites, for instance.

When the 10 ppm hydrogen sulfide EPA measured 30 to 40 feet away from the dam outlet is compared to the 0.0006 ppm RfC, a hazard index of approximately 17000 results. This means that the 10 ppm measured 30 to 40 feet away from the dam outlet is about 17000 times greater than the 0.0006 ppm value which is known not to have any appreciable health risk. This high hazard index does not mean that it is inevitable that anyone exposed at the 10 ppm would definitely have health problems, but that a hazard is definitely present. Generally, any time a hazard index for noncarcinogens like hydrogen sulfide is greater than one, the EPA and CDPHE usually ask the polluter to take action to ameliorate the problems on the basis of a potential health hazard.

The 170 ppm EPA measured right over the water at the dam outlet would result in an even greater hazard. However, because this high concentration was measured so close to the water (inches from the outlet), and would likely be diluted by the time it got into the breathing zone, one would expect people to be exposed to such high concentrations only infrequently (whenever the wind is in the right direction, not constantly), and for short time periods.

It is not scientifically appropriate to use the chronic RfC number for comparison to air concentrations that would be breathed

only under short-term circumstances. Unfortunately, the EPA has not yet derived acute RfC numbers for a valid comparison. Therefore, it is not really possible to actually quantify the potential hazard index for acute exposures. However, a potential acute health hazard exists since the 170 ppm is definitely in the range that can cause mild human toxicity and respiratory irritation after acute exposures. This concentration is higher than a mere nuisance odor or irritant, and is capable of causing, at least mild toxicity. It should not be ignored.

Ammonia:

I also have enclosed some basic printed toxicity information on ammonia that was written in fairly non-technical language. If after reading it, you still have any questions regarding the toxicity of ammonia, please don't hesitate to call me.

Basically, ammonia is also an irritant of the respiratory passages, eyes, and skin. It acts by a different mechanism than does hydrogen sulfide, but the resulting symptoms are fairly similar. Ammonia reacts with moisture in the air or on skin or mucous membranes to form ammonium hydroxide. Ammonium hydroxide is a base, which is the opposite of an acid. It is alkaline, and is a caustic substance. This substance is irritating at fairly low concentrations, and causes coughing, tearing of eyes, runny nose etc. At higher concentrations, ammonia can affect the lungs of both experimental animals and humans. Exposure to higher concentrations, especially for longer time periods has resulted in pulmonary edema and pneumonia.

While further studies still have to be performed, there is no evidence that ammonia causes cancer or birth defects.

When humans are exposed to both ammonia and hydrogen sulfide, one would expect roughly an additive irritant effect. The irritation of skin, eyes, and respiratory passages would be roughly doubled. Based on the water concentrations and EPA's air measurements on-site however, it is likely that the main pollutant you have been exposed to is hydrogen sulfide, rather than ammonia.

EPA has developed a chronic RfC for ammonia of 0.1 mg ammonia/m^3 air. This value is equivalent to 0.14 ppm ammonia in air. Notice from Table 18 in the ammonia information I sent you that the RfC, which would not be expected to cause any health problems, is lower than the odor threshold. Therefore, if one can smell ammonia, it may be at least at a mildly irritating level.

My major sources for this information were:

- Micromedex, Inc., 1995. The TOMES databases on ammonia and hydrogen sulfide.
- U.S.EPA, 1995 IRIS databases on ammonia and hydrogen sulfide.

(both of these databases are computerized information sources

on toxic chemicals).

- Casarett and Doull's Toxicology, 1991, M.O. Amdur, J. Doull, C.D. Klaasen, eds., 4th ed. McGraw-Hill, Publ., N.Y.
- ACGIH, Guide to Occupational Exposure Values-1992.

Finally, I would encourage you to ask your physician for a written letter, addressed to: To Whom It May Concern, which documents his/her concern for the possible health consequences of your continued exposure to hydrogen sulfide or ammonia. I think that copies of this letter could help you immensely in your fight to get this problem fixed.

Again, I hope this information is useful to you. If you need further explanation of any of the technical information, or if you think I might be able to help you otherwise, please do not hesitate to give me a call.

Best wishes,

Diane Niedzwiecki

Diane Niedzwiecki, Ph.D.

Disease Control and Environmental Epidemiology
Staff Toxicologist

cc: Jean Terry, CDPHE APCD
Joyce Ackerman, EPA Emergency Management

People I contacted Since Summer of 1995 - 1997

PSCo:

Jesse Brungardt 303-620-1341
Bill Uthray
Randy Rhodes - Controls release of water from lake.
Torry Staby 294-2986
Arlen Siert 294-2802
Lowell & Bruce - work under Randy Rhodes & monitor water daily when water is released.

Dr. Burgess
Darrell DeChant Encore - Texas Now works for PSCo

Letter sent to Pres. & CEO Wayne H. Brunetti: 571-7511 6-97

Tom Amen took Jessie Burngardts place

Weld County People:

John Pickle, Director Weld County Health 353-0635 ext 2204
1517 16th Ave Court
Greeley, Co 80631

Lori Exby
Jeff Stoll
Shabiy
Darrell Long wc Health water quality 692-3561

Bruce Barker County Atty 356-4000 ext. 4390

John Mulligan
Connie O'Neil
W.C. Commissioners: Connie Harbert 356-4000 ext 4200
Barb Kirkmeyer " "

Troy Swain, RS 353-0635 Ext 2236

State Health:

Jean Terry - Air quality 692-3255
Shelia Burns (Jeans Supervisor)

Dr. Diane Niedewieck, Toxicology 692-2651 8-23-95

Victor Sainz, water Quality inspects mud discharge

Kathy Sullivan, State Permits 692-3603 (very willing to help)

Ginny Torrez Colo State Permits Domestic enforcement 692-361

Sandy Marek 692-3617

Bob Shukle Permits 692-3500 (works w/ Kathy Sullivan)

Bob McConnell Lakes + streams 692-3578

Dennis Anderson water Standards - water quality 692-3571

Bill Wuerthele EPA 294-1338 Told me to call Bob + Dennis

Dave Holmes, (Victor Sainz - Boss) 692-3508
Susan Saul, Sec.

Dave Akers - permiting (make sure waste is under control)

Seema Diease Epidemology 692-2617

Dan Beley 692-3606 (works w/ Bob Shukle)
Referred me to Consumer Protection Hazard management
692-3620 ext. 3300

Lewis McBride 692-3174 Air pollution Div.
Reception 692-3150

Julia Kornduffer - Toxicologist } all work w/ Jean Terry
Nancy Chick 692-3226 }

Gordon was w/ Jean Terry by Sept. 5, 1997 to monitor on WCR 13 PSCo Lake Thomas outlet + Fischtners

water commissioner · Bill Gamberella - 303 772-9363
water Resources - Tells PSCo when there is
Call on river & TO release water from their lake Thomas.

Dam Safety:

Greeley 352-8712

All repairs & etc on lake Thomas has TO go
Thru This office
Dick Stincle Div. Eng
Jim Hall Asst. Div. Eng
Dave Nelthes
Jim Dubler

Staff TO Commission 692-3526
Paul Forhardt Tech. Dir approved by Govn.

* Harbor American Care (own property where Country View Home located on WCR 32) by PSCo lake thomas
Permit for discharge CO-0042021 (30-35 pages Long)

Clean water Action Colo. 303-839-9866
899 Logan St., Suite 101 Just Write Legislation
Denver 80203

Sen. Don Amendt
Liz Adams

(b) (6)

Rep. Dave Owen

Lt. Gov. office

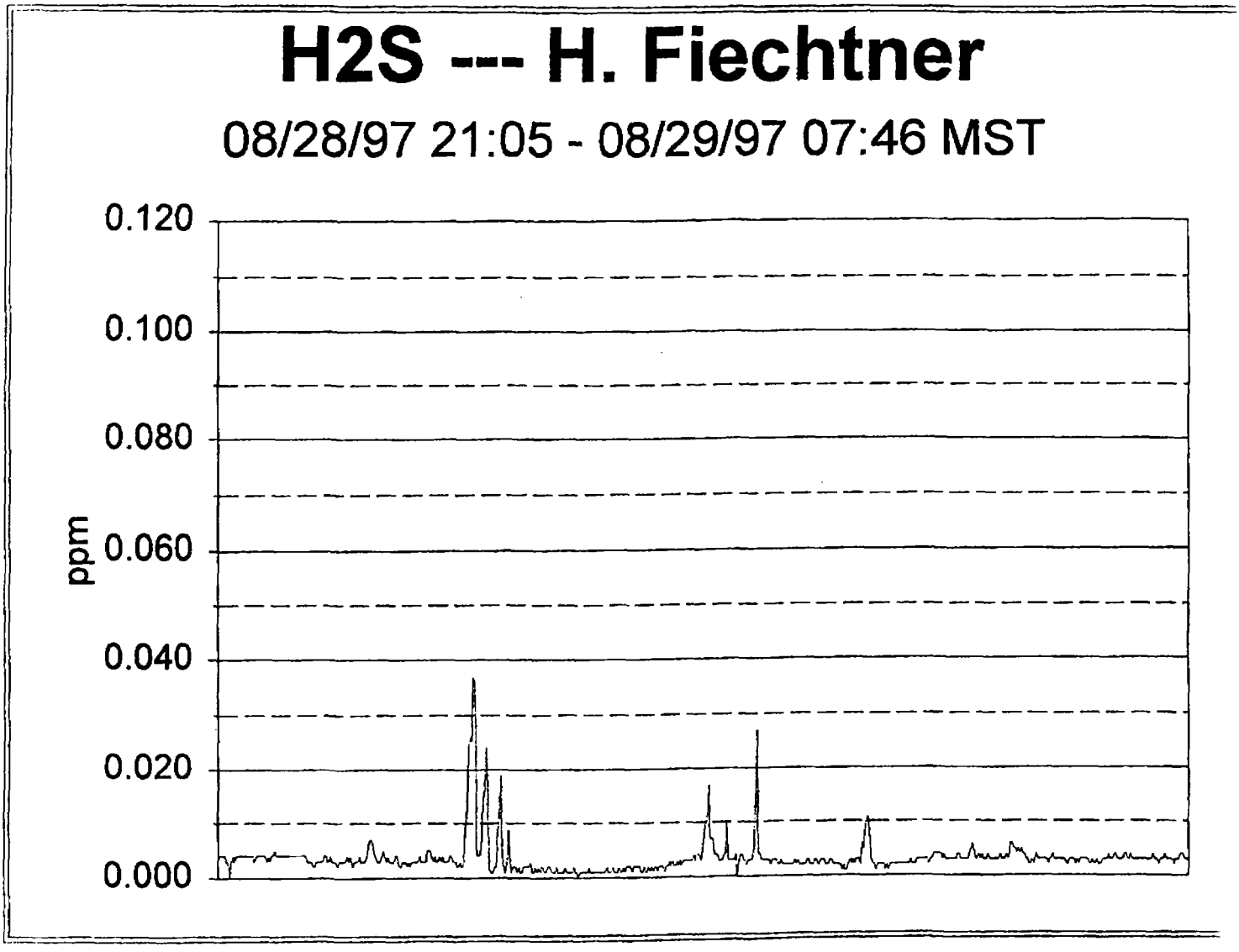
Sen. Wayne Allard

Margie Martinez W.C. Sheriff Dept. 356-4015 ext. 4638
Ann Herring Emgerency Expert 356-4015 ext 4250

NIOSHA Dale Camper 8-17-95
OSHA Ed Porter 844-5285

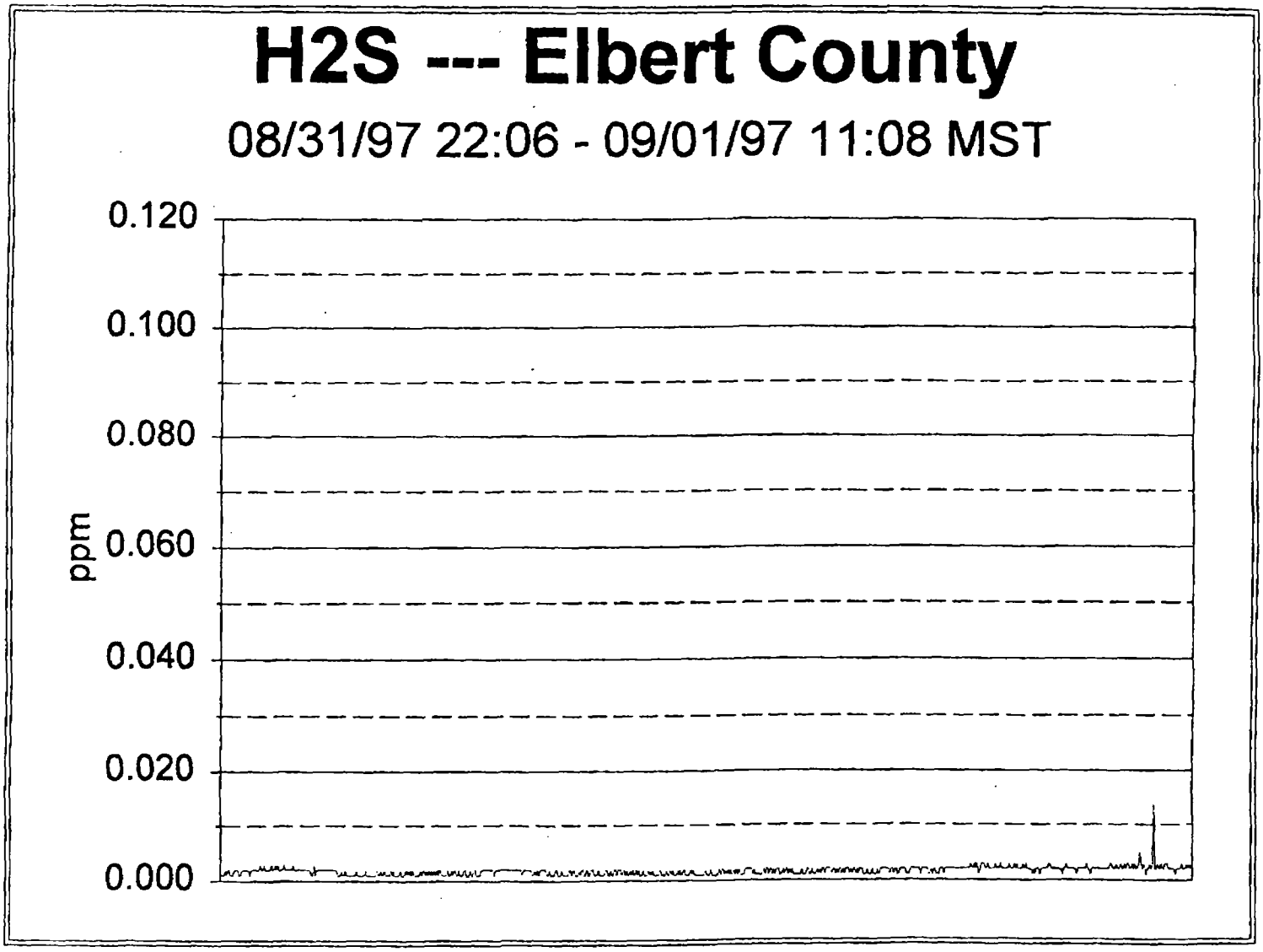
Readings are from monitoring study by Jean Terry, Colo State Health. Air Quality

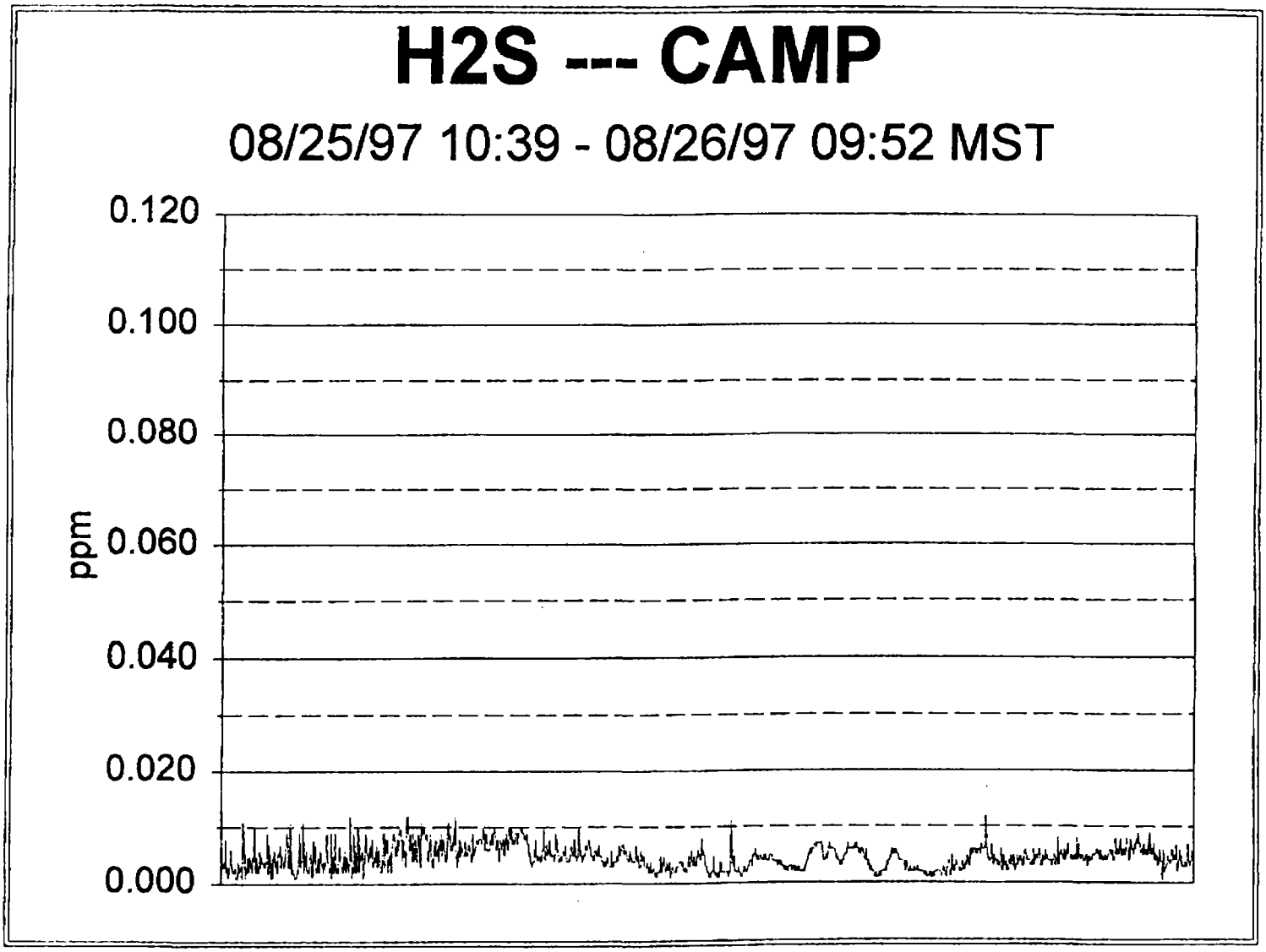
Farm



Compare with Fiechtner Farm

Farm

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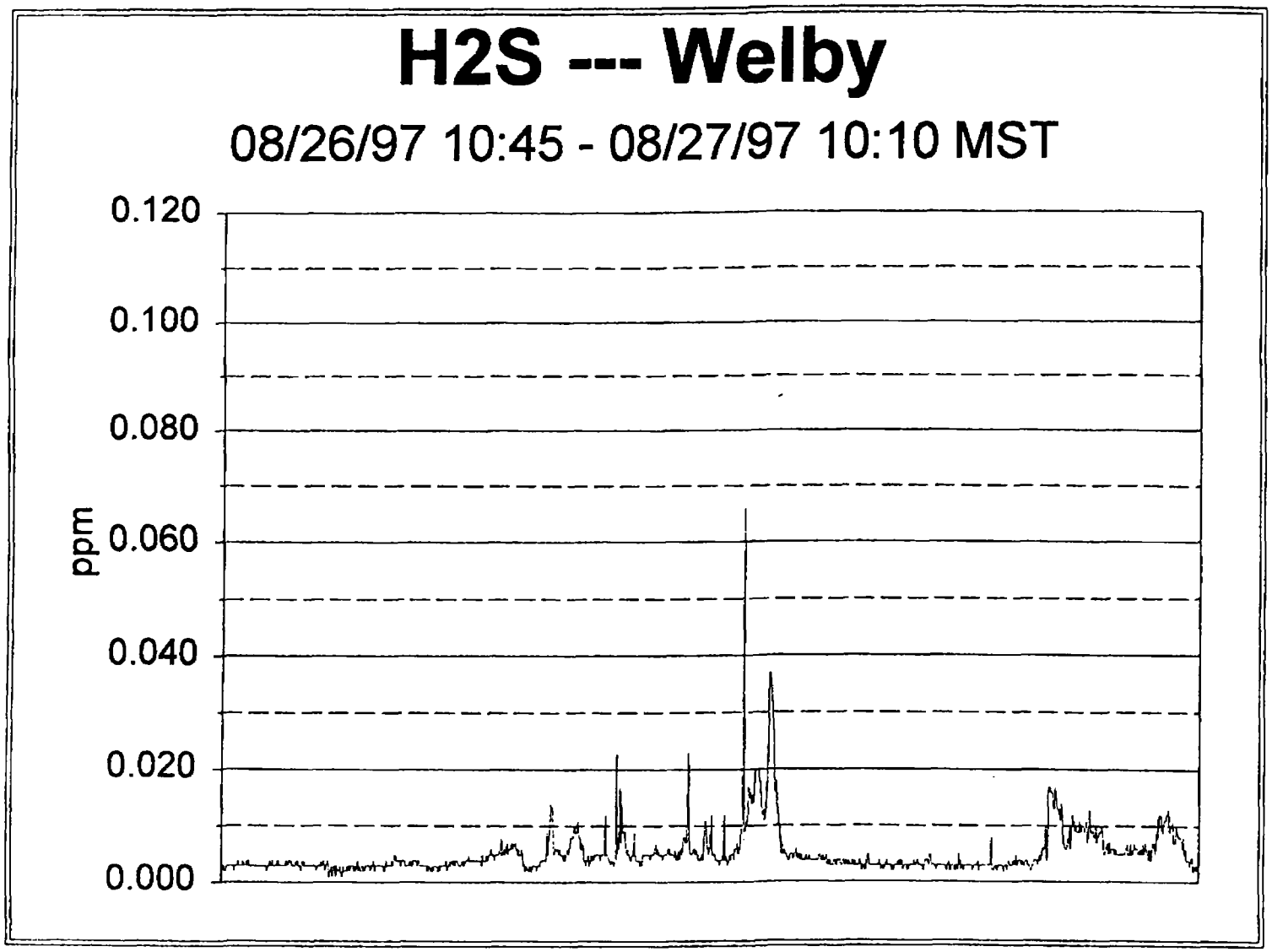
ppm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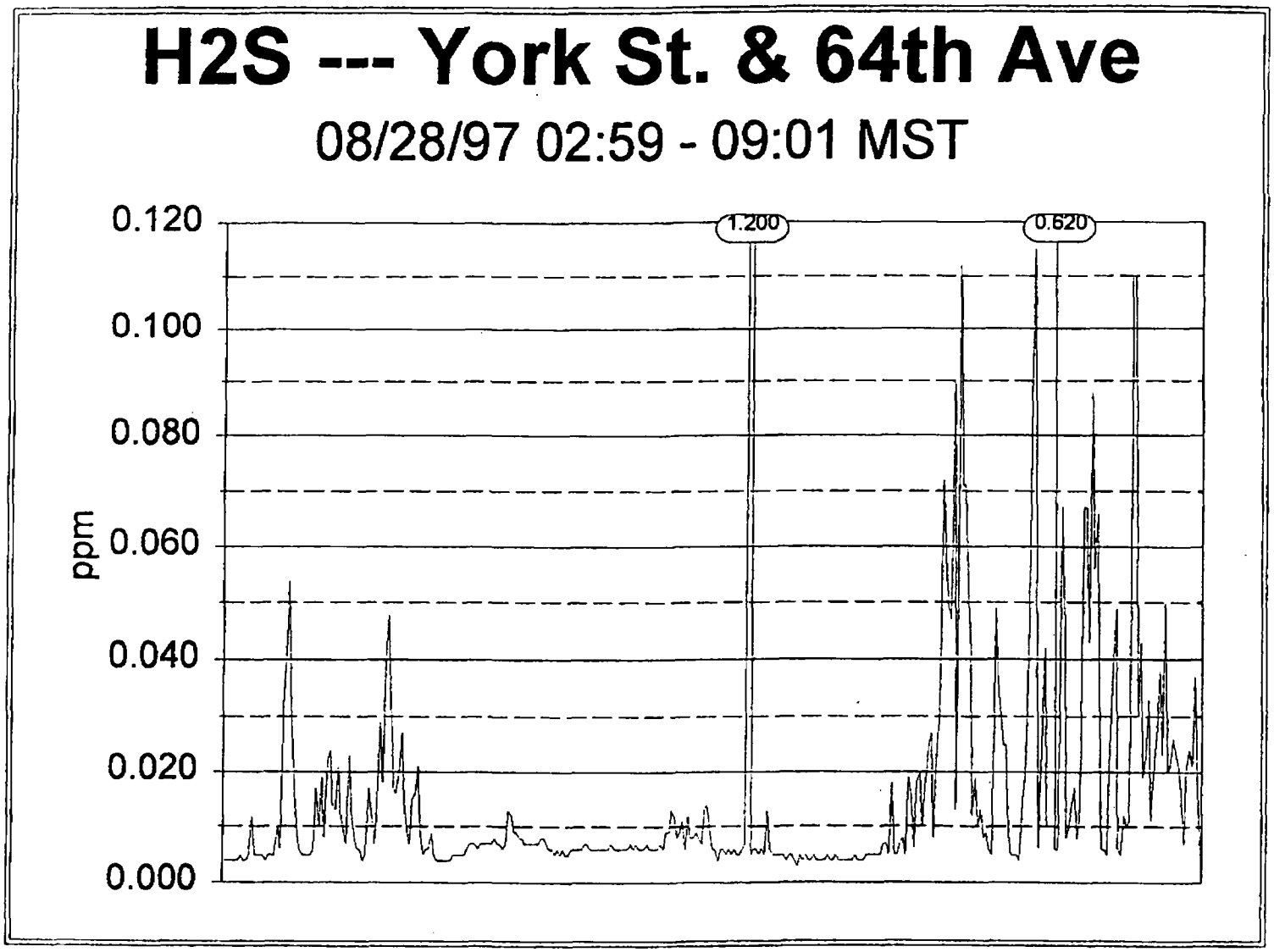
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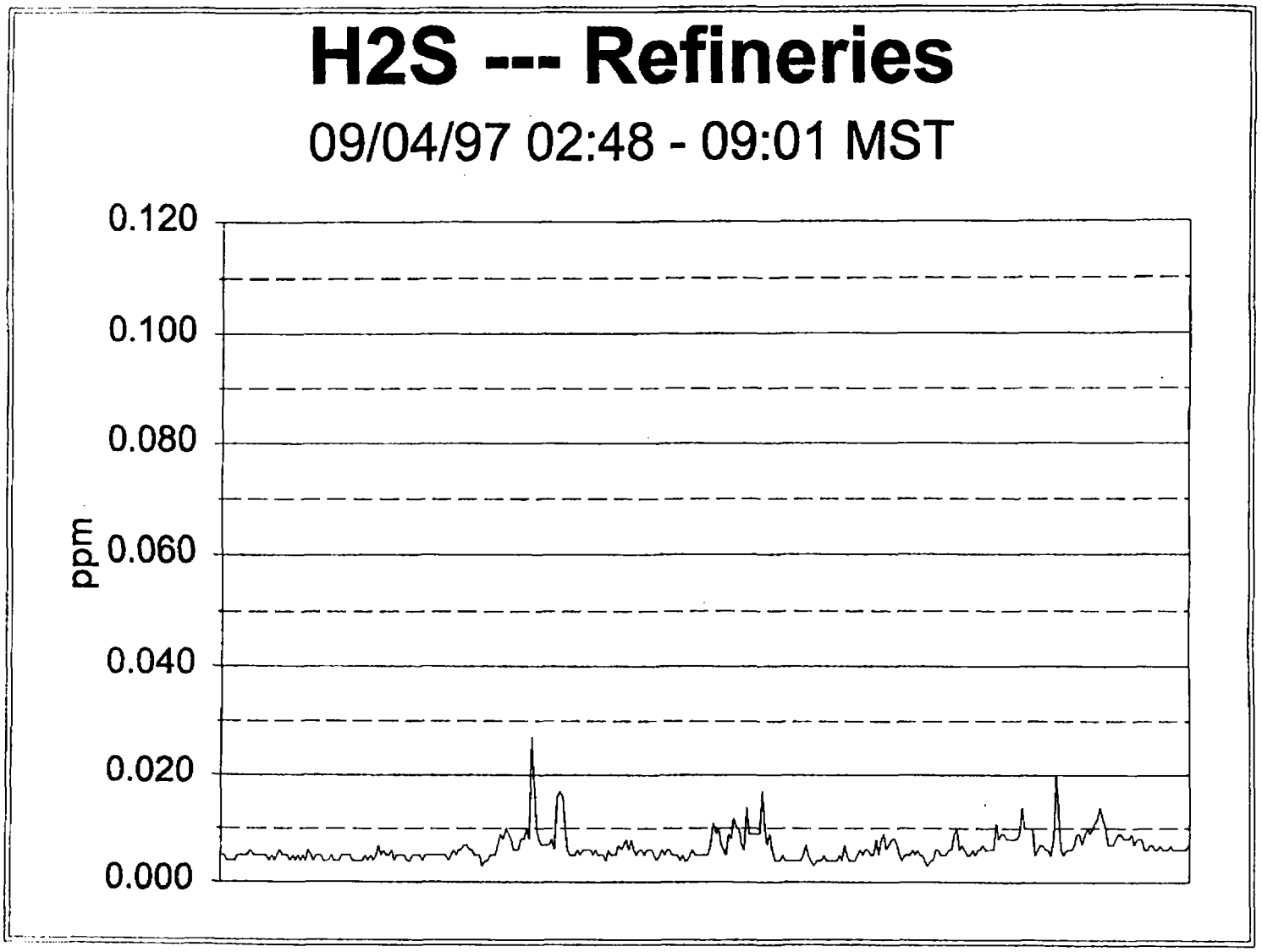
→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